

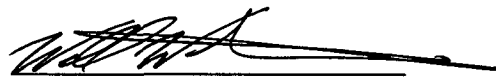
SITE INSPECTION TASK WORK PLAN
FOR
CASTLE DRIVE LANDFILL
TXD980626766
WA # 25-6JZZ


EPA Project Manager

6/18/93
Date


Project Manager

6/2/93
Date


Team Leader

6/11/93
Date

**SITE INSPECTION TASK WORK PLAN
FOR
CASTLE DRIVE LANDFILL
TXD980626766
WA # 25-6JZZ**

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**SITE INSPECTION TASK WORK PLAN
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CASTLE DRIVE LANDFILL
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1.0 INTRODUCTION

The Fluor Daniel ARCS Team was tasked by the U.S. Environmental Protection Agency (EPA) to develop a Site Inspection Task Work Plan for the Castle Drive (Castle) Landfill Site (TXD980626766). This site is located in Garland, Dallas County, Texas.

1.1 Site Sampling Inspection Objectives

The Site Inspection (SI) is an intermediate investigation study of the pre-remedial process. It further characterizes the site through the Hazard Ranking System (HRS) documentation. The SI expands on information obtained during the Preliminary Assessment (PA) conducted by the Texas Department of Health.

The objectives of the site sampling inspection are to describe possible hazardous waste contamination at the site and correlate this to a sampling strategy. The site specific activities and the responsibilities of the field team will also be identified.

1.2 Site Description

The Castle Drive site is an active landfill located in Garland, Texas west of Castle Drive, south of Miles Road, and east of Pleasant Valley Road. The address of the site is 3637 Castle Drive. The geographical coordinates of the center of the site are 32°56'03" north latitude and 96°35'02" west longitude (Ref. 1, 2).

The site encompasses approximately 151 acres (Ref 3) and is adjacent to Castle Miles Landfill (TXD980750368). The site sketch is shown as Figure 2. These two sites are owned and operated by the City of Garland as a single operating landfill. A total of 10 employees work on-site at the landfill (Ref 14). The landfill operates daily from 7:00 am to 7:00 pm. The landfill only accepts municipal solid wastes, including Duck Creek wastewater treatment plant sludges. No liquid or hazardous wastes are accepted (Ref 2). The City of Garland disposes

of approximately 600 tons/day of refuse into the landfill (Ref 12). The Castle portion of the site is currently accepting wastes on its northern border with the "old burning dump" (see Figure 2).

The City of Garland operates this landfill and the Castle Miles Landfill as one landfill. The site has undergone permit modification to manage these sites as one landfill; however, it still has two operating permits (Permit #1062A for Castle and Permit #1277 for Castle & Miles). The site has an engineered clay liner which is a minimum of 3 feet thick (Ref 10). Eleven monitoring wells exist on-site and limited hazardous constituent data is available (Ref 5, 6). In addition, another 3 characterization study wells exist on-site. A minimum of 2 feet of cover will be applied once the landfill is closed in 1999 (Ref 5, 13).

The City of Garland states that no hazardous wastes are accepted at the site. This site is permitted and regularly inspected by the Texas Department of Health, Bureau of Solid Waste Management. Although these inspections have found minor housekeeping problems, there is no information to suggest that significant quantities of hazardous waste have been accepted at the site. However, miscellaneous residential wastes do contain hazardous constituents which may migrate from the site.

The site is currently made up of sixteen parcels all owned by the City of Garland (Ref 4). The City bought an additional 25 acres of land (15 of the 16 parcels) for the landfill after a "Notification of Hazardous Waste Site" form was submitted by the Texas Department of Health in 1981. Access to the site is controlled by a gatehouse and lockable gate at the entrance. Unauthorized entry is additionally discouraged through fencing alongside Castle Drive and Miles Road (Ref 14). Site access can be gained through the western wooded boundary; however, access by this route is difficult and unauthorized persons are asked to leave the property.

The site is adjacent to the City of Garland's "old burning dump" and the Miles Road Landfill (TXD980697072). The "old burning dump", where municipal wastes were burned prior to restrictive regulations, is adjacent to the site on its northwest border. The Miles Road landfill is about 1200 feet northeast of the site across from the "old burning dump" on Miles Road.

A Site Investigation is currently being performed on the Miles Road site by Fluor Daniel. No CERCLA activities are known to have been performed on the "old burning dump".

Land use within 1/2 mile of the site is primarily agricultural, pasture or undeveloped bottom land. Low density residential areas exist near the site and a church is located across Castle Drive. No schools, businesses, or terrestrial sensitive environments are located within 200 feet of the site. Commercial agriculture (the pasture on the southeastern border of the site) is within 200 feet.

The site drains to the southwest into Rowlett Creek, which is less than 4/5 mile from the site (Ref 1). There is a pond on site, which overflows to Rowlett Creek. This pond also receives some of the site drainage. Rowlett Creek outlets 2 1/2 miles south from the probable point of entry (PPE) into Lake Ray Hubbard. Lake Ray Hubbard is used as a main water supply for the City of Dallas and other municipalities. Lake Ray Hubbard was formed by damming the east fork of the Trinity River. The 15 mile downstream segment ends on the east fork of the Trinity River, south of Lake Ray Hubbard. The site is outside of the 500 year floodplain (Ref 9).

Rowlett Creek is fished recreationally, particularly after rains which trigger spawning runs of white bass. There are no known drinking water intakes or other water resource uses along Rowlett Creek from the PPE to it's outlet into Lake Ray Hubbard. Lake Ray Hubbard is fished recreationally. The east fork of the Trinity River south of Lake Ray Hubbard is fished recreationally. There are no known drinking water intakes or other water resource uses along the east fork of the Trinity River from Lake Ray Hubbard to the end of the 15 mile downstream segment.

There are no municipal water wells in the City of Garland (Ref 11). The City of Garland receives its water from Lake Levon. The City of Garland historically used ground water for its municipal water source; however, ground water has not been used since 1960. All municipal wells were abandoned and filled with sand and concrete. The depth to ground water for these wells (3,200 feet) and ground water temperature discouraged further use (Ref

11). There are several private wells in use within a mile of the site. Only one of these wells (b) (6) well) is known to be used as a source of potable water (Ref 16).

There are no federal or state designated sensitive environments near the site (Refs 7, 8). No federal or state designated endangered or threatened species are known to exist within 4 miles of the site (Ref 7, 8). The Texas Garter snake is a state Category 2 (under review) species and may inhabit terrestrial areas within 4 miles of the site.

The population surrounding the site is estimated as follows:

0 - 1/4 mile	21
1/4 - 1/2 mile	255
1/2 - 1 mile	1,791
1 - 2 miles	10,240
2 - 3 miles	14,376
3 - 4 miles	25,891

The population for the 0 - 1/4 mile ring was determined by a house count during the site reconnaissance (Ref 16). The total of seven houses were determined to be within 1/4 mile of the site. A housing population density (3.01 persons per house) was determined using Reference 15. The population for distance rings starting greater than 1 mile were determined through the use of GEMS (Ref 19). The population for the 1/4-1/2 mile and 1/2-1 mile ring were determined by linearly interpolating the population density from the 0-1/4 mile ring to the 1-2 mile ring.

1.3 Site Specific Objectives

The primary objective of this site inspection is to document the presence, or absence, of hazardous materials both on-site and off-site. An HRS prescore for the site will also be determined. This information will indicate if the site warrants further investigation or if no further action is required.

This is an active landfill site. One or more additional layers of waste will eventually be interred upon the site. Therefore, the final site drainage and ground water gradient may be altered prior to landfill closure due to future landfill activity. The sampling to be performed as part of this site sampling investigation can only characterize the site in its current state.

This sampling plan will address all possible pathways of migration. The site, including the Castle Drive Landfill, has 11 ground water monitoring wells and 3 characterization study wells. All of these monitoring wells will be sampled, either as part of this sampling investigation or as part of the Castle Drive Landfill SI, which is being conducted concurrently. The clay cover in place over the most recent cell of waste interred at this site will be sampled to determine potential exposures from both the soil exposure pathway and air pathway. Sediment samples will be taken from the surface water pathway to determine potential migration of contaminants.

2.0 DATA REVIEW AND DATA COLLECTION

All previously collected sampling and non-sampling data are addressed in this section. Proposed data collection activities are also discussed.

The site has 11 ground water monitoring wells which have all been tested for general water quality parameters (Ref 6). In addition, a metals analysis was performed on monitoring well 8A (see Figure 2). This metals analysis has not undergone proper QA/QC to be considered acceptable data for use in this investigation. However no key metal constituents were detected.

The PA prepared by the Texas Department of Health (Ref 3) did not identify the site as a significant threat to the environment. No samples were taken as part of this study and the information provided is cursory. Based on the PA, the site status was determined as "no further action required".

All data collection activities will be conducted in accordance with the following documents:

- "Final Project Work Plan - Revision 1 for the Site Inspection Project, EPA Region VI, Volume I", June 9, 1992, Fluor Daniel.
- "Original Project Field Sampling Quality Assurance Project Plan for the Site Investigations, Region VI, EPA", July 5, 1992, Fluor Daniel.

water recharge through small fissures in the clay. The gross precipitation in the Garland area is approximately 35 inches per year (Ref 18).

The City of Garland and adjacent cities rely completely on surface water (Lake Levon or Lake Ray Hubbard) for domestic water use. No municipal ground water wells are known to exist within 4 miles of the site. The closest known active domestic drinking water well is that owned by (b) (6) which is within 1 mile of the site. Ground water samples will be taken from this well as part of the concurrent Miles Road Landfill SI. This sample will help determine the background water quality of the shallow aquifer. This sampling point is not depicted in Figure 3 due to its inclusion in another SI.

The site has 11 monitoring wells and 3 characterization study wells (see Figure 2). The reported ground water depths in the monitoring wells vary from 2.50 feet to 46.48 feet below grade (Ref 6). Samples will be taken from monitoring well numbers 3A, 8A, 9, and 10; as well as "characterization study wells" 10A, 10B, and 10C as part of this SI with the well purging and waste disposal procedures per the "Generic Project Field Sampling Plan". The other seven monitoring wells will be sampled as part of the Castle Miles Landfill SI.

This site has an engineered clay liner and is built upon an area of low permeability clays. The leaching potential from the bottom of the landfill to ground water is low. The potential for horizontal migration through the soils is also low. However, the very high shrink swell potential of the native soils will increase the potential for migration due to the formation of subsurface cracks in the clays.

2.3 Surface Water Migration Pathway

The overland runoff from the site drains into Rowlett Creek. Rowlett Creek outlets 2 1/2 miles south from the probable point of entry (PPE) into Lake Ray Hubbard. Lake Ray Hubbard is used as a main water supply for the City of Dallas and other municipalities. Lake Ray Hubbard was formed by damming the east fork of the Trinity River. The 15 mile downstream segment ends on the east fork of the Trinity River, south of Lake Ray Hubbard. There are no federal or state designated sensitive environments along the 15 mile downstream segment.

- "CLP Users Guide", EPA Region VI, not dated.
- "Original Health and Safety Plan, Site Inspections", June 8, 1992, Fluor Daniel.

There are still many questions and data gaps concerning this site. It is expected that some of the questions will remain unanswered and some data gaps cannot be filled using appropriate references. However, an attempt will be made to answer all questions and fill all of the data gaps during the sampling event, and through additional contact with the State of Texas and the City of Garland. The list of data gaps is given in Table 1. Proposed sample locations and rationale are listed in Table 2. Figure 3 shows the proposed sample locations.

2.1 Source Waste Characterization

Sample analysis will consist of Target Compound List (TCL) organics and Target Analyte List (TAL) inorganics. The available records do not indicate that there are any particular constituents of concern for this site. Volatile organics are likely to be present through the decomposition of organic materials interred at the landfill. The presence of semivolatiles is possible due to the significant residential construction activity in east Garland and may include various asphalt water proofing materials. Pesticides and PCBs are of concern because the "old burning dump" is adjacent to this site. Inorganics originate from many waste types. Cyanides may be present from plating wastes and other metal processing wastes. However, significant amounts of industrial waste are not believed to be interred at the site.

2.2 Ground Water Migration Pathway

The site is located in the western portion of the East Texas Basin Province. The regional geologic setting is characterized by mixed, thick sequence of terrigenous (sandstone, siltstone, shale) and carbonate (limestone, dolomite), units that appear relatively undeformed. The general orientation of these strata, including the regional fault pattern, is northeast-southwest. The local geological setting is described as the Ozan formation ("lower Taylor marl"), which has a thickness of greater than 500 feet (Ref 17). The native clays have low permeability but are characterized by very high shrink swell potential which allows ground

A section of the site drains into an on-site pond which overflows to Rowlett Creek. Additionally, a water retention pond exists on-site. This pond retains standing water that has been collected by vacuum truck from active areas of the landfill after rainfall events.

The sampling plan has been designed to determine the potential migration of materials via runoff from the site by sampling sediment from the natural pond which drains the site and overflows towards Rowlett Creek. A sediment sample of Rowlett Creek will be taken below the PPE. Additionally, a sediment sample will be taken in the drainage gully in the far southeast of the site.

2.4 Soil Exposure Pathway

There are no residences within 200 feet of the site. The McCallum property line is within 200 feet; however, the two residences on the property are more than 200 feet from the site boundary. Ten permanent employees work at the site (Ref 14). A church is located across Castle Drive from the landfill; however, it is greater than 200 feet from the site. The closest school is Back Elementary which is approximately 3/4 mile southeast of the site.

Currently the site is accepting waste. The inactive areas of the landfill have a minimum of 12 inches clay cover. The active area of the landfill has daily cover applied. Site access is restricted and the adjacent population is very low. Therefore, the soil exposure pathway is not of major concern. Since this is an active landfill with recently interred waste no samples will be taken at depth.

The sampling plan has been designed to determine if the landfill workers are within 200 feet of contamination by sampling the clays on the top and side slopes of the landfill. In addition, samples will also be taken down gradient (towards Rowlett Creek) on the property to determine hazardous material migration. Samples will be taken at the agricultural field across Miles Road, and on the church property across Castle Drive, as part of the concurrent Castle Miles SI, to determine background concentrations. These locations may not provide reliable background information for pesticides.

2.5 Air Migration Pathway

Currently, the site has 12 to 18 inches of clay cover, except in the area that is currently active. Some portions of the site are covered in yellow clay and other portions are covered in black clay. During the site reconnaissance a gas vent was observed bubbling through standing water on the Castle Miles part of the operating landfill. This gas vent may have been the result of water displacing air in the cell directly below the clay or gas formation by waste decomposition. Although no direct air release was observed on the Castle landfill it can be inferred that similar releases may exist. Therefore, soil samples will be analyzed for volatile organics to determine gas constituents.

The scope of this SI does not include air sampling. The proposed sampling will indicate if volatile organic compounds are present in surface soils and are available to the air migration pathway.

3.0 PROJECT MANAGEMENT

Key personnel, level of effort and project schedule are addressed in this section of the report.

The EPA project manager for this site is Mr. Lonnie Ross.

The SI Project Manager for Fluor Daniel is Mr. Jonathan Stewart. Mr. Stewart is responsible for the day-to-day management of all SI tasks associated with the work assignment. He is the key point of contact to the EPA Project Manager.

The Team Leader for Fluor Daniel for the Castle Landfill Site is Mr. William Walters. He will obtain site access, perform the site reconnaissance, prepare the sampling plan, direct field activities and prepare the final report.

Mr. Keith Westberry will be responsible for coordinating all sample documentation, including the CLP paperwork.

One additional staff member will assist with sampling, decontamination and documentation.

The sampling inspection is scheduled for the week of June 21, 1993.

4.0 REFERENCES

1. U.S. Geological Survey, 7.5 minute topographic map, Rowlett, Tex., 1959 (photorevised 1968 and 1973).
2. Texas Department of Health, "Potential Hazardous Waste Site Identification and Preliminary Assessment", February 20, 1981.
3. Texas Department of Health, "Potential Hazardous Waste Site Final Strategy Determination", February 20, 1981.
4. Record of Telephone Conversations between Tom Casabonne, Fluor Daniel, and the Dallas County Tax Office (various personnel). March 22-30, 1993.
5. Record of Telephone Conversation between Tom Casabonne, Fluor Daniel, and Ken Smith, Landfill Director City of Garland Sanitation Department. March 16, 1993.
6. Groundwater Monitoring Reports, Solid Waste Permit No. 1062-A. Submitted to Texas Water Commission from the City of Garland. February 4, 1993.
7. Record of Telephone Conversation between Josh Sacker, Fluor Daniel, and Jeff Reed, U.S. Fish & Wildlife Service Ecological Division. April 7, 1993.
8. Record of Telephone Conversation between Josh Sacker, Fluor Daniel, and Dorinda Sullivan, State of Texas Parks & Wildlife. April 7, 1993.
9. Federal Emergency Management Agency, Flood Insurance Rate Maps, Garland, Texas, Community-Panel Number 485471 0020 D, Map Revised Date August 15, 1990.
10. Record of Telephone Conversation between Tom Casabonne, Fluor Daniel, and Ken Smith, Landfill Director City of Garland Sanitation Department. April 5, 1993.
11. Record of Telephone Conversation between Josh Sacker, Fluor Daniel, and Jack May, City of Garland Water Department. April 8, 1993.
12. Municipal Solid Waste Facilities Quarterly Report. From the City of Garland to the Texas Water Commission. Second, Third and Fourth Quarter of 1992.
13. Sanitary Landfill Permit Application. Attachment No. 7 - Typical Fill Cross Sections. City of Garland. 1984.

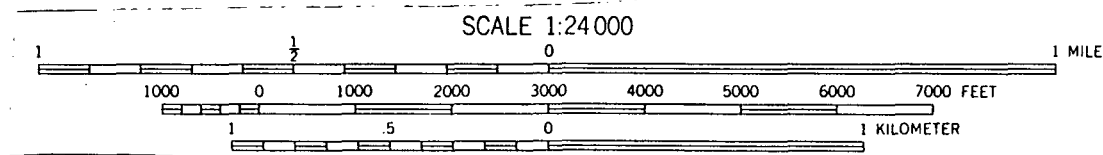
14. Site Operating Plan (revised). City of Garland. October 19, 1992.
15. County and City Data Book. U.S. Department of Commerce, Bureau of the Census. Pg 715. 1988.
16. Castle Miles Landfill Reconnaissance Field Notebook. William Walters. 5/11/93.
17. Geologic Atlas of Texas, Dallas Sheet. Bureau of Economic Geology, the University of Texas at Austin. 1972.
18. Soil Survey of Dallas County, Texas. United States Department of Agriculture, Soil Conservation Service. Pgs 16, 17, 27, 78, 142 & 144. February, 1980.
19. Geographic Exposure Modeling System, Census data for the Castle Miles Landfill Site, Garland, Texas. May 13, 1993.

FIGURES

FIGURE 1
SITE LOCATION MAP



NOTE: Topographic Map, Rowlett Quadrangle. 1959. Photorevised 1968 and 1973



QUADRANGLE LOCATION

Location Map
Castle Drive Landfill
Garland, Texas



FLUOR DANIEL

Figure 1

FIGURE 2
SITE SKETCH

LEGEND:

- FENCE
- ROADS
- SITE AREA
- MONITORING WELL

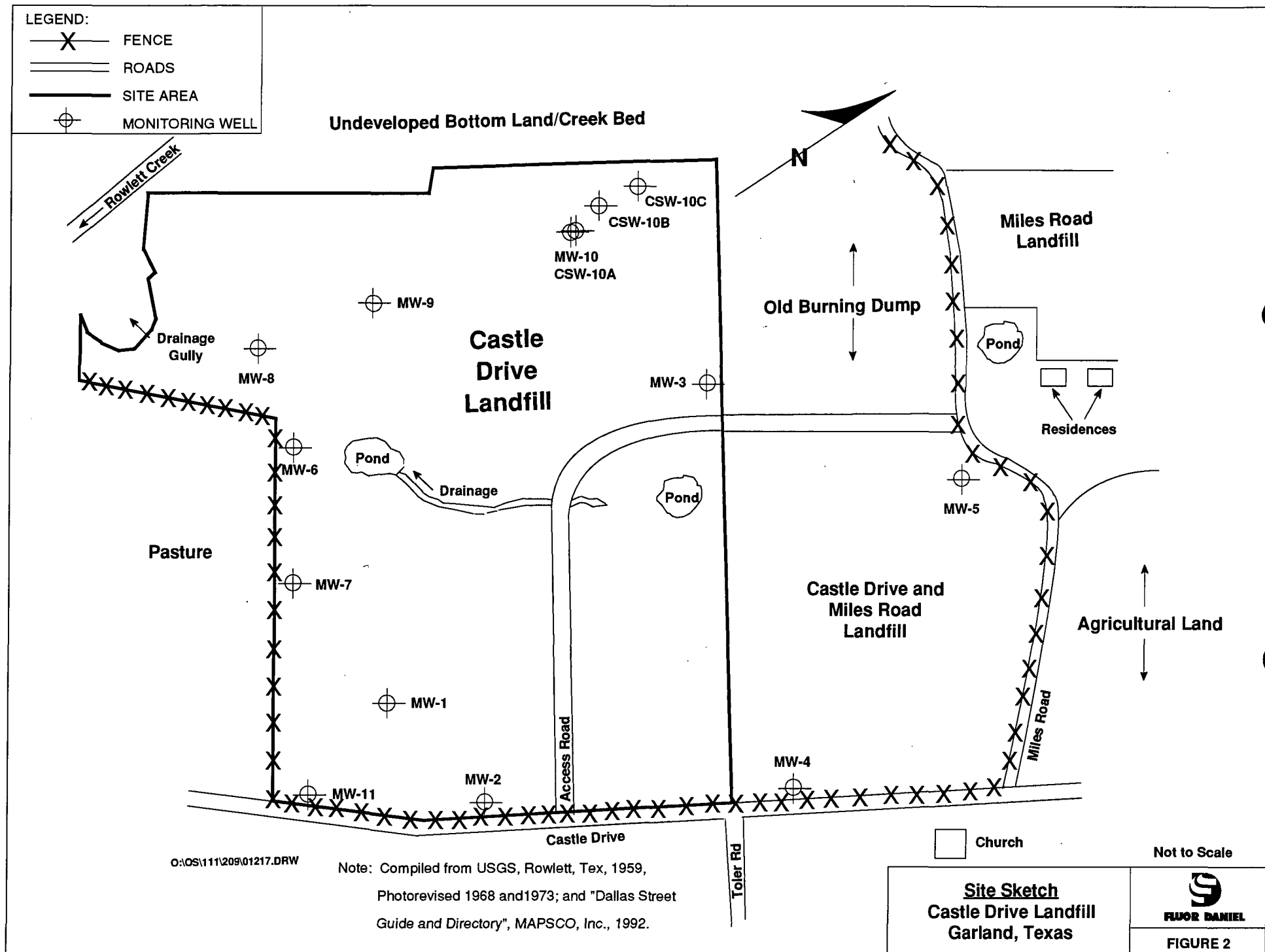


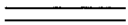


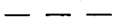

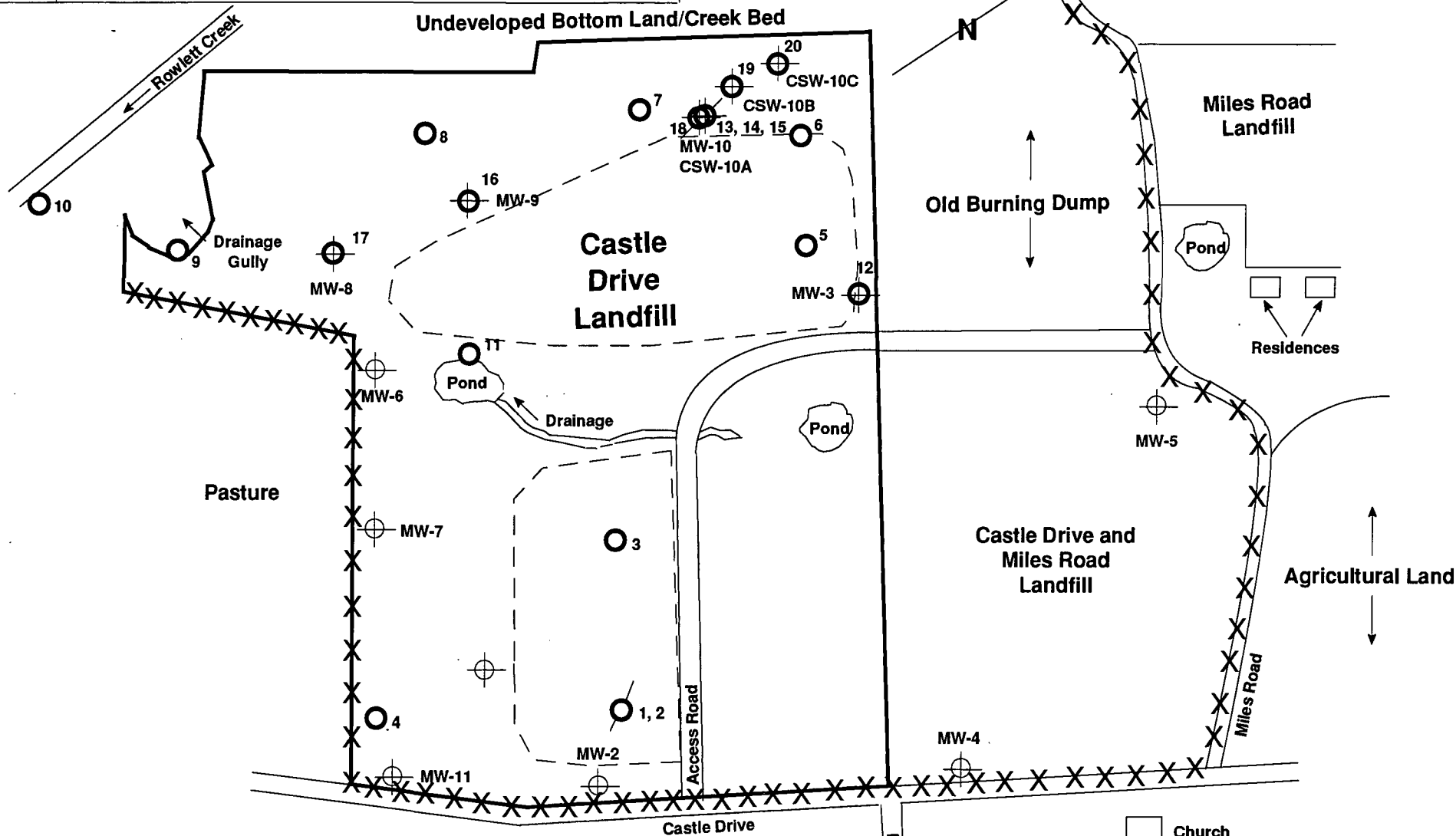


FIGURE 3
SAMPLE LOCATIONS


LEGEND:

- | | | | |
|---|-----------------|---|--------------------------|
|  | FENCE |  | PROPOSED SAMPLE LOCATION |
|  | ROADS |  | DUPLICATE SAMPLE |
|  | SITE AREA |  | WASTE DISPOSAL AREA |
|  | MONITORING WELL | | |




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Note: Compiled from USGS, Rowlett, Tex, 1959,
Photorevised 1968 and 1973; and "Dallas Street
Guide and Directory", MAPSCO, Inc., 1992.

 Church

Not to Scale

Sample Locations
Castle Drive Landfill
Garland, Texas


FLUOR DANIEL
FIGURE 3

TABLES

TABLE 1
NON-SAMPLING DATA GAPS

TABLE 1
NON-SAMPLING DATA GAPS

Landfill Data

- What is the depth of the waste? What is the total volume of the waste to date and what will be the closed landfill volume?
- Additional site history would be helpful to fully characterize the site (Were there any other historic activities conducted on this site? Has fuel been stored on-site for the earth moving equipment used at the site? Is fuel currently being stored on-site? Are any other chemicals being used on-site for equipment cleaning, etc.?)
- Are there any new or proposed state or local regulations that will impact this site? Will the State of Texas or the City of Garland eventually require leachate collection or soil gas extraction?

Ground Water Pathway Data

- Are there any municipal ground water wells within a four mile radius of the site? If any, what population do they serve? How many private wells are within a four mile radius of the site? Are these private wells used as a resource (i.e. for agriculture, livestock, etc.), as potable water, or both?
- What is the depth to ground water? What is depth of aquifers currently being used within 4 miles of the site? What are the aquifer interconnections?
- What is the soil permeability from the surface to the uppermost used or interconnected aquifer? What is the thickness of the least permeable layer?
- Does ground water connect with surface water within 1 mile of the site?

TABLE 1 (cont'd)
NON-SAMPLING DATA GAPS

Surface Water Pathway Data

- What is the flow rate of Rowlett Creek? Are there any resource uses for the water from Rowlett Creek in the segment from the PPE to its discharge into Lake Ray Hubbard?
- What is the total annual surface water and ground water recharge into Lake Ray Hubbard?
- Where are the water intakes located in Lake Ray Hubbard? What population does Lake Ray Hubbard serve? What kind of water treatment is performed on water taken from the lake prior to its distribution? Is there any available water quality data for hazardous constituents?
- What is the flow rate of the east fork of the Trinity River south of Lake Ray Hubbard? Are there any resource uses for the water from the east fork of the Trinity River from Lake Ray Hubbard to the end of the 15 mile downstream segment?
- What is the fish productivity (how many pounds of fish are taken annually) in Rowlett Creek from the PPE to its discharge into Lake Ray Hubbard? What is the fish productivity in Lake Ray Hubbard? What is the fish productivity in the east fork of the Trinity River from Lake Ray Hubbard to the end of the 15 mile segment?
- What is the total length of wetlands along the surface water pathway?

Air Pathway Data

- What is the acreage of wetlands within a 4 mile radius of the site?

TABLE 2
SAMPLING LOCATIONS AND RATIONALE

TABLE 2
SAMPLING LOCATIONS AND RATIONALE

Sample 1

Low concentration soil sample: Collected on top of landfill cell in the west side of the western cell of the landfill. This is also the QA/QC sample.

Rationale: To determine potential contamination on-site (source characterization) and document observed contamination within 200 feet of workers (soil exposure pathway). Also, to help determine the quality control of the analyses performed on the soil samples taken as part of this SI.

Sample 2

Low concentration soil sample: Duplicate of Sample 1.

Rationale: To determine potential contamination on-site (source characterization) and document observed contamination within 200 feet of workers (soil exposure pathway). Also, to help determine the quality control of the analyses performed on the soil samples taken as part of this SI.

Sample 3

Low concentration soil sample: Collected on top of landfill cell in the east side of the western cell of the landfill.

Rationale: To determine potential contamination on-site (source characterization) and document observed contamination within 200 feet of workers (soil exposure pathway).

Sample 4

Low concentration soil sample: Collected at southeast corner of site in area that has not been used as landfill.

Rationale: To determine potential contamination on-site (source characterization) and document observed contamination within 200 feet of agriculture (soil exposure pathway).

Sample 5

Low concentration soil sample: Collected on top of landfill cell at the north side of the western slope of the northern cell of the landfill (adjacent to the currently active area of landfill).

Rationale: To determine potential contamination on-site (source characterization) and document observed contamination within 200 feet of workers (soil exposure pathway).

Station 6

Low concentration soil sample: Collected at the bottom of the northwest hillside of the northern cell of the landfill.

Rationale: To determine potential contamination on-site (source characterization).

TABLE 2 (cont'd)
SAMPLING LOCATIONS AND RATIONALE

Station 7

Low concentration soil sample: Collected approximately 150 feet southwest of Monitoring Well 10.

Rationale: To determine potential contamination on-site (source characterization).

Station 8

Low concentration soil sample: Collected approximately 250 feet west of Monitoring Well 9.

Rationale: To determine potential contamination on-site (source characterization).

Sample 9

Low concentration soil/sediment sample: Collected from the surface water drainage on the southwest corner of the site.

Rationale: To determine potential contamination on-site (source characterization/surface water pathway).

Sample 10

Low concentration soil/sediment sample: Collected from sediments at the confluence of the southwest site drainage and Rowlett Creek (PPE). (Note: An upstream sediment sample from Rowlett Creek will be taken as part of the concurrent Miles Road Landfill SI)

Rationale: To document possible observed release to the surface water.

Sample 11

Low concentration soil/sediment sample: Collected from the edge of the natural pond in the south central area of the site.

Rationale: To determine potential contamination on-site (source characterization/surface water pathway). Additionally, the on-site pond may be a wetland area; therefore, this sample may also document contamination within 200 feet of a sensitive environment.

Sample 12

Low concentration ground water sample: Taken from Monitoring Well Number 3. This monitoring well is just north of the landfill between it and the "old burning dump".

Rationale: To document possible observed release to the ground water.

Sample 13

Low concentration ground water sample: Taken from Monitoring Well Number 10. This monitoring well is west of the active area of the landfill.

Rationale: To document possible observed release to the ground water.

TABLE 2 (cont'd)
SAMPLING LOCATIONS AND RATIONALE

Sample 14

Low concentration ground water sample: Duplicate of Sample 13. This sample will also be the QA/QC sample.

Rationale: To document possible observed release to the ground water and to help determine the quality control of the analyses performed on the ground water samples taken as part of this SI.

Sample 15

Trip blank: Taken at the same location as Samples 13 and 14.

Rationale : To help determine the quality control of the analyses performed on the ground water samples taken as part of this SI.

Sample 16

Low concentration ground water sample: Taken from Monitoring Well Number 9. This monitoring well is west of the active area of the landfill.

Rationale: To document possible observed release to the ground water.

Sample 17

Low concentration ground water sample: Taken from Monitoring Well Number 8A. This monitoring well is west of the active area of the landfill.

Rationale: To document possible observed release to the ground water.

Sample 18

Low concentration ground water sample: Taken at "Characterization Study" Well Number 10A. This well is west of the active area of the landfill, and is up gradient and adjacent to Monitoring Well 10.

Rationale: To document possible observed release to the ground water.

Sample 19

Low concentration ground water sample: Taken from "Characterization Study" Well Number 10A. This well is west of the active area of the landfill and is approximately 100 feet down gradient from Monitoring Well 10.

Rationale: To document possible observed release to the ground water.

TABLE 2 (cont'd)
SAMPLING LOCATIONS AND RATIONALE

Sample 20

Low concentration ground water sample: Taken from "Characterization Study" Well Number 10A. This well is west of the active area of the landfill and is approximately 250 feet down gradient from Monitoring Well 10.

Rationale: To document possible observed release to the ground water.

(Note: Background soil samples and ground water samples will be taken as part of the concurrent Castle Drive and Miles Road Landfill SI and Miles Road Landfill SI, respectively.

ATTACHMENT 1
ADDENDUM TO THE GENERIC HEALTH AND SAFETY PLAN

**ADDENDUM TO GENERIC HEALTH AND SAFETY PLAN
FOR SITE INSPECTION
CASTLE DRIVE LANDFILL, TXD980626766
WA # 25-6JZZ**

1.0 INTRODUCTION

The purpose of this addendum is to identify specific hazards, set action levels, define the levels of protection and to complete emergency response information for reconnaissance and sampling activities at the Castle Drive Landfill Site in Garland, Texas.

2.0 SITE DESCRIPTION

The Castle Drive Landfill Site is an active sanitary landfill located in Garland, Texas southwest of the corner of Castle Drive and Miles Road. This landfill along with the Castle and Miles landfill constitutes the City of Garland municipal landfill system. The geographical coordinates of the center of the site are North 32°56'03" latitude and West 96°35'02" longitude.

The site encompasses approximately 155 acres. The City of Garland owns the property and disposes of approximately 600 tons of municipal solid waste per day into the landfill. Hazardous and liquid wastes are not disposed in the landfill. The site has a clay liner. There are 11 monitoring wells and 3 "characterization study wells" around the site. The perimeter of the site is annually monitored for methane gas emissions.

Access to the site is gained through the gated entrance on Castle Drive. The operating hours for the landfill are 7:00 am to 7:00 pm daily. All site inspection activities will be conducted during the regular operating hours of the landfill.

The site generally drains to the southwest towards Rowlett Creek. The site is outside of the 500 year floodplain.

3.0 HAZARDS

The following sections will describe, based on available information, the chemical and physical hazards associated with this site.

3.1 Chemical Hazards

On-site soils have not been previously sampled; therefore no data exists to determine contaminants of concern. Various depths (6 inches to 2 feet) of cover exist in the different working areas of the landfill. This cover, along with the fact the no liquid or hazardous wastes are accepted at this landfill, suggests that the chemical exposure hazards will be minimal. However, proper protective equipment will be used to minimize chemical exposure.

Nuisance odors are likely to be present on-site at this active sanitary landfill. Individuals that are particularly sensitive to the landfill odors (headache, dizziness, nausea, etc.) will notify the task leader for work task reassignment or replacement by other available personnel.

3.2 Physical Hazards

The physical hazards are vehicle traffic, heat stress, and trip/fall hazards. This active landfill has dump trucks and earth moving equipment operating on-site. The hazards due to vehicle traffic are increased due to the limited visibility that these large vehicles afford. Special attention will be paid to remaining out of the path of vehicles while working at the site. Control of heat stress injuries is described in the appendix of the generic HASP. Severe injuries could occur due to trip/fall hazards on this site. Another hazard that may be encountered at this site is poisonous snakes (rattlesnakes or cottonmouths) and fire ants.

4.0 MONITORING

No specific contaminant of concern is known to be present, and high levels of hazardous material are not expected on the surface of this site. However, HNu monitoring will be performed to determine if potentially hazardous volatile organic compounds are being released from the soils during sampling.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Workers entering a potentially contaminated area must have protective equipment available for use. The most likely exposure scenario at this site would be dermal contact and inhalation of volatile organic compounds or dust contaminated with hazardous constituents that reside in the soils to be sampled. Since the existence, types, and concentration of hazardous constituents are not known for this site, the level of protection that is required to be available will be Level C Protection and will consist of the following:

- Full face air purifying respirator with a high efficiency particulate filter and protection from acid gases and organic vapors;
- A 10-minute escape pack for each sampler;
- Polyethylene coated Tyvek with hood;
- Inner latex gloves;
- Outer nitrile gloves;
- Chemically resistant boots with steel toe/steel shank; and
- Hard hats.

The Tyvek coveralls, if used, will be taped at the wrists and ankles.

This site is an active municipal landfill that does not accept liquid or hazardous wastes. Therefore, the level of protection that is assumed to be necessary is Level D. The Site Task Leader will determine whether an upgrade to Level C is necessary during the sampling inspection based on the results of the HNu monitoring.

Decontamination procedures are defined in the body of the generic HASP and in the sampling plan.

6.0 EMERGENCY PROCEDURES

In the event an emergency situation arises, such as injury, illness, or fire, the appropriate immediate response must be taken by the first person to recognize the situation.

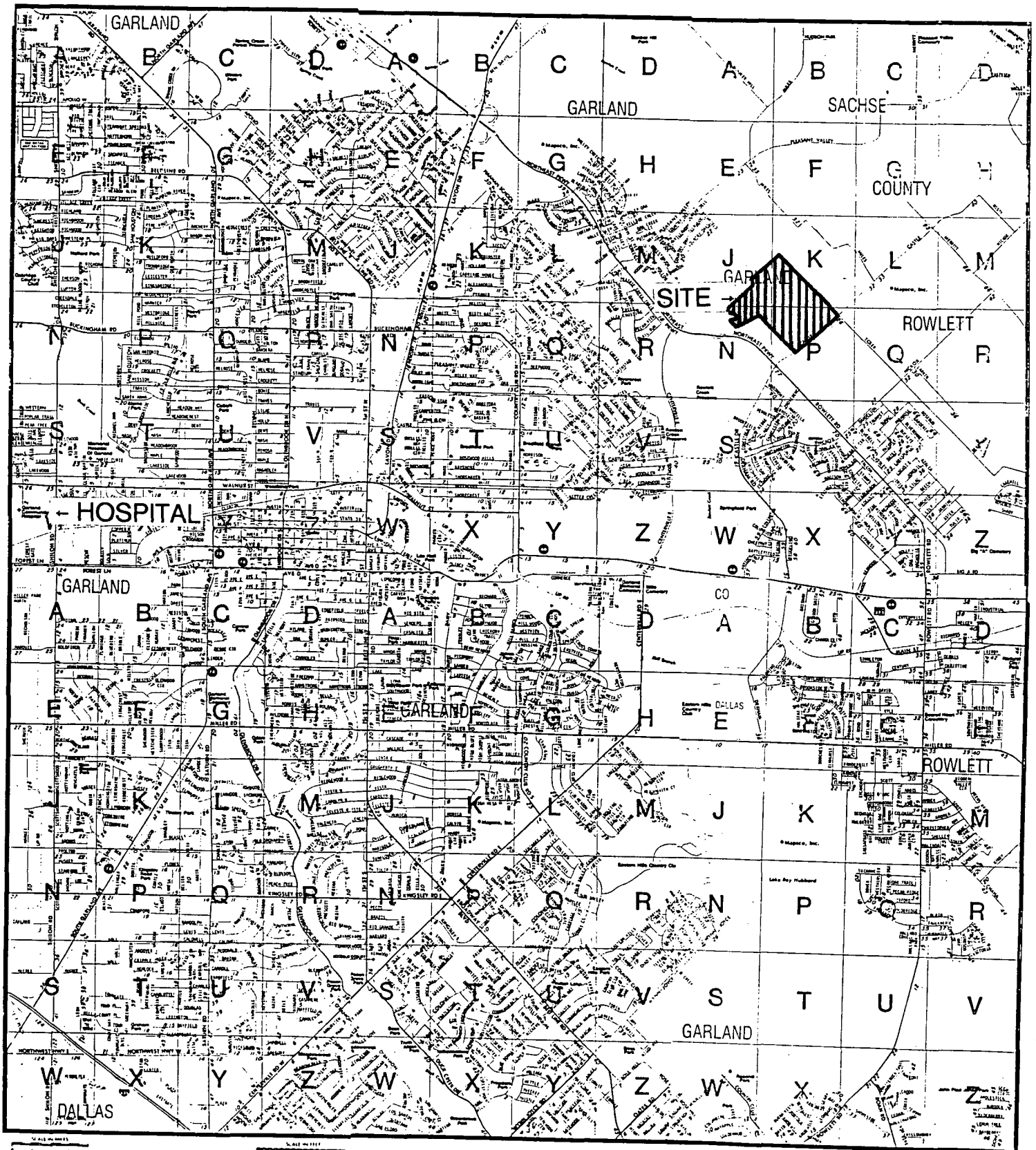
First aid equipment and an emergency eye wash unit will be available on-site. Should a worker be so severely injured that decontamination is not possible the ambulance crew and hospital will be so notified.

A list of emergency contacts are provided below in order of contact. A route map and verbal route description to the hospital is attached to this addendum and will be posted at the site.

Police, Fire, or Ambulance	911
Fluor Daniel Health and Safety Manager	(214) 450-4100
EPA Work Assignment Manager	(214) 655-8374

ROUTE TO GARLAND COMMUNITY HOSPITAL

276-7116



From Castle Drive Site:

Take Castle Dr. southwest and travel approximately 2.4 miles, staying left on Castle Dr. as it turns into Dexham Rd. Then turn right (west) on State Highway 66 and proceed for approximately 1.8 miles then turn right (north) on Country Club Rd. Go approximately 0.3 miles then turn left (west) on Walnut St. Proceed on Walnut St. for approximately 3.2 miles then turn left (south) on King St. Garland Community Hospital will be at the end of the driveway. (Alternative hospital is the Memorial Hospital in Garland. Directions are identical through Walnut St. Go 2.8 miles on Walnut. Turn right [north] onto Clara Barton and go 0.15 miles to Marie Curie. Memorial Hospital is on the northeast side of the intersection.)

ATTACHMENT 2
BACKGROUND/SAMPLE STRATEGY

BACKGROUND/SAMPLE STRATEGY

Site: <u>Castle Drive Landfill</u>	Conducted By: <u>W. Walters</u>
Location: <u>Garland, Texas</u>	Project Manager: <u>J. Stewart</u>
Tentative field date: <u>Recon 5/11/93</u>	Sampling <u>6/21-25/93</u>

PART I

Site Description (size, structures, extent of pavement)

The Castle Drive landfill and Castle Miles landfill together comprise the current City of Garland operating landfill. The Castle Miles landfill is 151 acres in total size. The site is mainly covered in soil (clays) and vegetation. There are is a paved road running through the site and one trailer and scale located near the entrance.

Site Activity (years, processes, waste, disposal practices)

Past: This landfill, which accepts only municipal solid wastes, has been in operation since the late 70's.

Present: This part of the operating landfill is currently active; however, it will be inactive in the future when wastes are sent to the Castle Miles part of the operating landfill.

Previous Sampling?	YES	NO	COMMENT
Groundwater	X	O	<u>Monitoring Wells 1 - 11</u>
Soil/Sediment	O	X	<u></u>
Other	X	O	<u>Methane around perimeter</u>
Have any results been obtained? (Attach on separate page)	X	O	<u>Metals - Well 8A only</u>
Did sample analysis include QC/BKGD?	X	O	<u>QC yes, Background no</u>
Has any remediation occurred?	O	X	<u></u>
Will samples be collected?	X	O	<u></u>

**BACKGROUND/SAMPLE STRATEGY
PART II**

Sample Summary and Rationale

<u>MATRIX</u>	<u># OF SAMPLES</u>	<u>LOCATION</u>	<u>DEPTH</u>	<u>GRAB/COMP.</u>
Soil	5	On-Site	Surface	Grab
Soil	3	Off-Site	Surface	Grab
Sediment	3	Off-Site	Surface	Grab
Ground Water	8	Off-Site	N/A	Grab
Trip Blank	1			

Sample Analysis

<u>MATRIX</u>	<u>ANALYSIS</u>						<u>OTHER</u>
			<u>VOA</u>	<u>SEMI</u>	<u>PCB/PEST</u>	<u>INORG.</u>	
Soil/Sediment	X	CLP	X	X	X	X	<u>Cyanides</u>
Groundwater	X	CLP	X	X	X	X	<u>Cyanides</u>
	O	CLP	O	O	O	O	_____
	O	CLP	O	O	O	O	_____

COMMENTS: Four samples locations are on-site, and 13 are off-site with 3 of those being sediment samples along the surface water pathway (note: on-site is defined as directly on top of areas of waste disposal, including side slopes, for the Castle section of the operating landfill). Groundwater samples will be taken at 4 of the 11 monitoring wells and all 3 "characterization study wells" (all off-site). Depth to water for the wells being sampled has previously been in the range of 2.50 to 46.48 feet. Background samples are being taken as part of the Castle Miles Landfill SI (soil) and the Miles Landfill SI (groundwater, sediment). In addition, we are required to take a trip blank sample.

GROUNDWATER MONITORING REPORT

TDH Permit No. 1062-A Monitoring Well I.D. No. MW-8A (D92-14836-3)
 Submittal for ☒ Background Data ☐ Semiannual/Annual Data ☐ Fourth Year Data
 Purpose of: Groups 1, 2, 3, & 4 Groups 3 & 4 Groups 2, 3, & 4

Date Sampled: 12/29/92 No. Lt. Bottles Collected: 4+voa Sampled by: Reed Engineering Group
 Representing: Site Operator ☐ Consultant ☒ Laboratory Personnel ☐
 Well Purged/Bailed Before Sampling: Yes ☒ No ☐ How Long Before: 24 hours
 No. Well Volumes Purged: 1 Depth to Water Before Bailing: 14.66 ft Elev 442.07 MSL
 How Were Samples Collected: Hand pump. Decontamination between wells.
 Were sample preservation procedures in accordance with TDH Guidelines: Yes ☒ No ☐

GROUP	PARAMETER	LEVEL	UNITS	ANALYSIS METHOD
1	Arsenic	<0.01	mg/l	EPA 7062
	Barium	0.11	mg/l	EPA 6010
	Cadmium	<0.005	mg/l	EPA 6010
	Chromium	<0.05	mg/l	EPA 6010
	Copper	<0.01	mg/l	EPA 6010
	Lead	<0.02	mg/l	EPA 6010
	Mercury	<0.001	mg/l	EPA 7470
	Selenium	<0.01	mg/l	EPA 7740
	Silver	<0.01	mg/l	EPA 6010
	Zinc	0.05	mg/l	EPA 6010
2	Calcium	200.	mg/l	EPA 6010
	Magnesium	26.4	mg/l	EPA 6010
	Sodium	148.	mg/l	EPA 6010
	Potassium	1.1	mg/l	EPA 6010
	Carbonate	<0.1	mg/l	Std. Method 403
	Bicarbonate	850.	mg/l	Std. Method 403
	Sulphate	154.	mg/l	EPA 9038
	Fluoride	0.6	mg/l	EPA 340.2
	Nitrate (N)	0.61	mg/l	EPA 353.3
	Phenolphthalein Alkalinity (CaCO ₃)	<0.1	mg/l	Std. Method 2320
	Alkalinity (CaCO ₃)	697.	mg/l	EPA 310.1
	Hardness (CaCO ₃)	600.	mg/l	EPA 130.2
	Anion-Cation Balance	18.8/18.6	meq/meq	Std. Method 1030F
3	Chloride	54.9	mg/l	EPA 9252
	pH	7.0		EPA 9040
	Specific Conductance	1600	µmho/cm	EPA 120.1
	Total Dissolved Solids	1070	mg/l	EPA 160.1
	Total Organic Carbon	<1.0	mg/l	EPA 9060
	Total Organic Carbon	<1.0	mg/l	EPA 9060
	Total Organic Carbon	<1.0	mg/l	EPA 9060
	Total Organic Carbon	<1.0	mg/l	EPA 9060
4	Iron	<0.05	mg/l	EPA 6010
	Manganese	0.17	mg/l	EPA 6010

Laboratory Representative Signature: Syonia S. Bestucci Phone: (214) 238-5591
 Laboratory Name: NDRC Laboratories, Inc. Address: 1089 East Collins Blvd. Richardson, TX 75081
 Site Operator Signature: Ken Smith Date: 2-4-93
 (SE65)

ATTACHMENT 3
PHOTOLOG

Photo No.
1



Site Name:
Castle Landfill

CERCLIS # TXD980626766

Location:
Garland, Texas

Project #: WA #25-6JZZ

Photographer/Witness

William Walters/Keith Westberry

Date 5/11/93

Time Afternoon

Direction Northeast

Description

Panoramic of the northwest corner of the Castle Landfill showing the currently active area of the landfill.

Photo No.
2



Site Name:
Castle Landfill
CERCLIS # TXD980626766
Location:
Garland, Texas
Project #: WA #25-6JZZ

Photographer/Witness William Walters/Keith Westberry
Date 5/11/93 Time Afternoon Direction South
Description Panoramic of the southeast area of the Castle Landfill. The trees in the background show the division where wastes have and have not been interred. Castle Drive is demarcated by the power lines on the right of the photo.

Photo No.
3



Site Name:
Castle Landfill

CERCLIS #	TXD980626766	Photographer/Witness	William Walters/Keith Westberry	
Location:	Garland, Texas	Date	5/11/93	Time Afternoon Direction Northwest
Project #:	WA #25-6JZZ	Description	Photo of active landfill area in northeast corner of site.	

Photo No.
4



Page 3
Of 5

Photographer/Witness	William Walters/Keith Westberry		
Date	5/11/93	Time Morning	Direction Southeast
Description	Photo of active area of landfill from top of cell.		

Photo No.

5



Site Name:

Castle Landfill

CERCLIS #	TXD980626766	Photographer/Witness	William Walters/Keith Westberry	
Location:		Date	5/11/93	Time Afternoon
Garland, Texas		Description	Photo of western side slope of landfill. Monitoring well number can be seen to the left of the photo.	
Project #:	WA #25-6JZZ			

Photo No.

6



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Of 5

Photographer/Witness	William Walters/Keith Westberry		
Date	5/11/93	Time	Afternoon
		Direction	South
Description	Photo of natural pond in the south central area of the site. Pasture, with cows visible, south of the site can be seen in the background.		

Photo No.

7



Site Name:

Castle Landfill

CERCLIS # TXD980626766

Photographer/Witness

William Walters/Keith Westberry

Location:

Date

5/11/93

Time Afternoon

Direction West

Garland, Texas

Description

Photo of site drainage on extreme southwest of the site that will be sampled as part of this SI. Drainage leads to Rowlett Creek.

Project #:

WA #25-6JZZ

ATTACHMENT 4
CLP SAMPLE REQUEST FORM

REGION 6
CLP SAMPLE REQUEST FORMSite Name: Castle Drive Landfill Location: Garland, TX CERCLIS # TXD980676766Type of Investigation: ☒ SSI ☐ ESI ☐ HRS ☐ RI/FS ☐ RA ☐ Other: Sampling Comp.: Fluor Daniel Contact: Jonathan Stewart Ph.: (214) 450-4100Shipping Contact: William Walters On Site Ph.: (214) 450-4100 FAX#: (214) 450-4101Signed By: Date: Mail Code: Ph.:

(EPA SITE MANAGER, RPM, OSC)

Sampling Date: 6/21 to 6/25/93 Shipping Date: 6/21 to 6/25/93 Spill ID #: Turnaround Time: RAS Samples: 35-Day SAS Samples:

Is this activity a Superfund Lead? ☒ (Y) ☐ (N) / A PRP Lead? ☐ (Y) ☐ (N) / A State Lead? ☐ (Y) ☐ (N) / Other: Are these samples splits, provided by the PRP? ☒ (Y) ☐ (N) If these are split samples, please provide the names of the labs that the PRP's will use: Organic Lab(s) Inorganic Lab(s)

RAS ANALYSES (Submit to RSCC on Wednesdays by 11:00 AM, one week prior to your sampling date).

	Low Conc. Waters	Med. Conc. Waters	Low Conc. Soil/Sedm	Med. Conc. Soil/Sedm
TCL Organic (all three fractions)	9		11	
VOA Fraction				
BNA Fraction				
PES/PCB Fraction				
PCDD/PCDF (45 TA)				
TAL Metals + CN	9		11	
TAL Metals				

*Note: If you are collecting samples from drinking water sources, you must contact Lisa Feldman and obtain a Form from her. Lisa's phone is (713) 983-2129.

TCL = Target Compound List
TA = Turnaround Time
TAL = Target Analyte List
RAS = Routine Analytical Services
SAS = Special Analytical Services

SAS ANALYSES (Submit this Form in addition to the SAS Client Request Form three weeks prior to your sampling date).

# of Samp.	Matrix	Conc.	Source	Analytical Parameters Required

COMMENTS:

ATTACHMENT 5
EVALUATION CHECKLIST

EVALUATION CHECKLIST

NOTE: Information must be referenced; attach a list of references.

Site Name: Castle Drive Landfill, City of Garland
TDD No.: TXD980626766
Reference No.: _____

1. SOURCE AREAS, CONTAINMENT, WASTE QUANTITY

Complete the following for each area where hazardous substances have been deposited, stored, disposed of, or placed, plus those soils that have become contaminated from migration of a hazardous substance.

(refer to Table 1, and Tables 2-5, 3-2, 4-2, 6-3 and 6-9)

<u>Source Area</u>	<u>Containment</u>	<u>Waste Quantity</u>
<u>Landfill</u>	<u>12 to 18 in of cover</u>	<u>TBD</u>
_____	<u>and minimum 3 ft clay</u>	_____
_____	<u>liner (Ref 1, 2)</u>	_____
_____	_____	_____

2. AVAILABLE ANALYTICAL DATA

For the media listed below, note if there is a documented observed release or the potential to release to that media. An observed is noted if a hazardous substance is detected at three times the background sample concentration or background sample quantitation limit. A potential to release is noted if wastes were disposed of in a source area which would allow contaminant migration. (refer to PA Data and Rescoring Record Table for additional criteria).

<u>Media</u>	<u>Potential to Release</u>	<u>Observed Release</u>	<u>Comments</u>
Groundwater	<u>X</u>	_____	_____
Surface Water	<u>X</u>	_____	_____
Sediment	<u>X</u>	_____	_____
Soil < 2 feet deep	<u>X</u>	_____	_____
Soil > 2 feet deep	<u>X</u>	_____	_____
Air	<u>X</u>	_____	_____
Other (specify, e.g., sludge, source)	_____	_____	_____

3. GROUNDWATER PATHWAY

A. Population served by private wells or drinking water supplies within the designated area rings. Note if the water supplies within that ring are private (P), community (C) or both (B). (reference with water supply distribution maps and topographic maps using the average county population density)

<u>Distance</u> (miles)	<u>Population</u>	<u>Type of Supply (P.C. or B)</u>
0 - 1/4	0	(Ref 3)
1/4 to 1/2	0	(Ref 3)
1/2 to 1	3 (est)	Private (Ref 3)
1 to 2	12 (est)	Private (Ref 3)
2 to 3	48 (est)	Private (Ref 3)
3 to 4	192 (est)	Private (Ref 3)

B. Are any of the supplies to the population noted above contaminated? ☐ Yes ☐ No ☒ To be determined

If yes:

- What is the location of the well? _____
- What are the contaminants detected? _____
- Are any health-based benchmarks exceeded (e.g., MCLs)?
☐ Yes ☐ No

C. What is the distance to the nearest drinking water well?
0.60 miles (Ref 3,4)

D. What is the depth to groundwater on the property?
2.5 to 50 feet (Ref 5)

4. SURFACE WATER PATHWAY

A. Identify the surface water bodies and flow rates (cubic feet per second, cfs) along a 15 stream-mile pathway. Identify the uses of each surface water body as:

- DW = drinking water
- I = irrigation of commercial food crops or commercial forage crops
- L = watering of commercial livestock
- FP = ingredient in commercial food preparation
- R = major or designated recreation area
- F = fishery

<u>Surface Water Body</u>	<u>cfs</u>	<u>Use(s)</u>
<u>Onsite Pond</u>	<u>n/a</u>	<u></u>
<u>Rowlett Creek</u>	<u>TBD</u>	<u>F</u>
<u>Lake Ray Hubbard</u>	<u>n/a</u>	<u>DW, I, L, FP, R, F</u>
<u>Trinity River (east fork)</u>	<u>TBD</u>	<u>F</u>

B. Identify the population served by surface water intakes along the 15 stream-mile pathway.

<u>Surface Water Body</u>	<u>cfs</u>	<u>Use(s)</u>
<u>Lake Ray Hubbard</u>	<u>n/a</u>	<u></u>

C. Are any of the intakes to the population noted above contaminated? Yes X No

If yes:

- What is the location of the intake?
- What are the contaminants detected?
- Are any health-based benchmarks exceeded (e.g., MCLs)?
 Yes No

D. Are there any fisheries along the 15 stream-mile pathway that are contaminated? Yes X No

If yes:

- What is the location of the fishery?
- What are the contaminants detected?
- Are any health-based benchmarks exceeded (e.g., MCLs)?
 Yes No

E. Identify sensitive environments noted on PA Table 5, along the 15 stream-mile pathway and note the surface water body it is on.

<u>Sensitive Environment</u>	<u>Surface Water Body</u>
<u>None (Ref 6,7)</u>	<u></u>

F. Are there any sensitive environments along the 15 stream-mile pathway that are contaminated? Yes No

If yes:

- What is the location of the sensitive environment?
- What are the contaminants detected?

G. What is the distance to nearest surface water body?
 100 feet (Ref 4)

H. What is the flood frequency of the nearest surface water body? TBD years

5. SOIL EXPOSURE PATHWAY

A. What is the number of people who reside on the property or within 200 feet of contamination who occupy a residence, attend a school, or attend a day care center? 0 (Ref 3)

B. What is the number of workers on the property and at a workplace within 200 feet of contamination? 10 (Ref 8)

6. AIR PATHWAY

A. Population residing within the designated area rings. (reference with topographic maps using the average county population density for populations from 0 to 1/2 mile, and with GEMS for 1/2 to 4 miles)

<u>Distance (miles)</u>	<u>Population</u>
0 - 1/4	<u>21 (Ref 3, 9)</u>
1/4 to 1/2	<u>255 (interp. Ref 3, Ref 10)</u>
1/2 to 1	<u>1,791 (interp. Ref 3, Ref 10)</u>
1 to 2	<u>10,240 (Ref 10)</u>
2 to 3	<u>14,376 (Ref 10)</u>
3 to 4	<u>25,891 (Ref 10)</u>

B. Determine the wetland acreage for the following rings:

<u>Distance (miles)</u>	<u>Total Wetland Acreage</u>
0 - 1/4	<u>TBD</u>
1/4 to 1/2	<u>TBD</u>
1/2 to 1	<u>TBD</u>

References

1. Record of Telephone Conversation between William Walters, Fluor Daniel, and Ken Smith, Landfill Director City of Garland Sanitation Department. May 21, 1993.
2. Record of Telephone Conversation between Tom Casabonne, Fluor Daniel, and Ken Smith, Landfill Director City of Garland Sanitation Department. April 5, 1993.
3. Castle Drive Landfill Reconnaissance Field Notebook. William Walters. 5/11/93.
4. U.S. Geological Survey, 7.5 minute topographic map, Rowlett, Tex., 1959 (photorevised 1968 and 1973).
5. Groundwater Monitoring Reports, Solid Waste Permit No. 1062-A. Submitted to Texas Water Commission from the City of Garland. February 4, 1993.
6. Record of Telephone Conversation between Josh Sacker, Fluor Daniel, and Jeff Reed, U.S. Fish & Wildlife Service Ecological Division. April 7, 1993.
7. Record of Telephone Conversation between Josh Sacker, Fluor Daniel, and Dorinda Sullivan, State of Texas Parks & Wildlife. April 7, 1993.
8. Site Operating Plan (revised). City of Garland. October 19, 1992.
9. County and City Data Book. U.S. Department of Commerce, Bureau of the Census. Pg 715. 1988.
10. Geographic Exposure Modeling System, Census data for the Castle Drive Landfill Site, Garland, Texas. May 13, 1993.